Q1) Definition the Following term

1) Volumetric Tetration :- is the Tetration depends on measuring the volume

2- Titrant :- is a substance which has known concentration

3- Titrand :- is substance which has unknown concentration

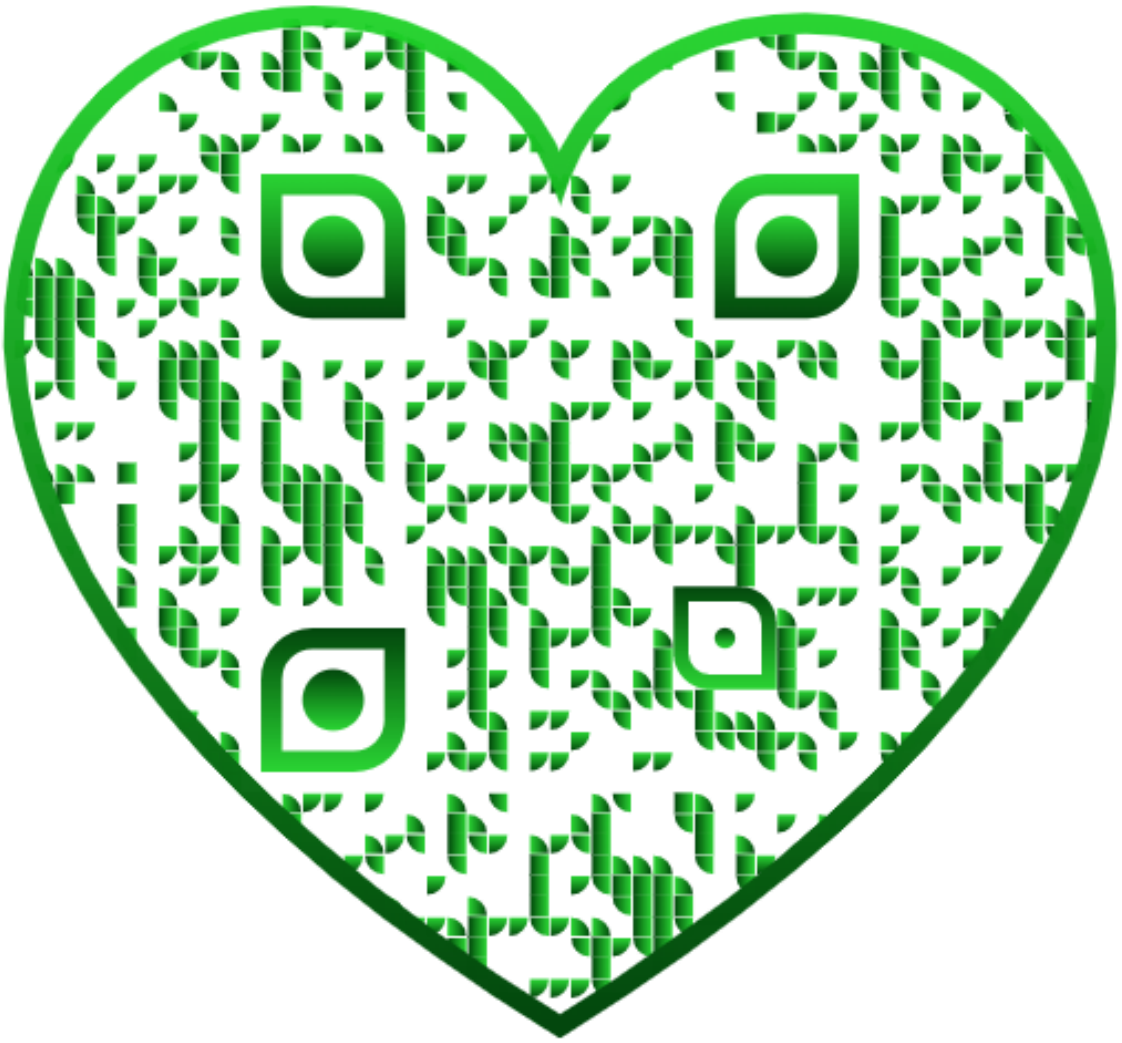
4- Titration Error :- is the diffrence ~~betwen~~ in volume betwen the equalvence Point and the end point

5- Indicator :- chemical substance that gives physical change (change in color) at the end point

6- standard solution :- is a solution with known concentration used to carry out titrametric analysis

7- Primary standard solution :- is a solution with High purity and prepared directly and doesn't need standardlization

8- Secendary standard solution :- is a solution with low purity and prepared indirectly and need standardlization



compare betwen المقارنه بين

Qualtitive	Quantitative
Identification of one ormore constituents of sample التعرف على واحد او اكثر من مكونات العينه	- Determine how much of Particular species is Present constituents تحديد الكميه التي تشكلها الجزيئات الجزيئات الموجوده

End Point	Equivalnce Point
- Practical Point	- Theortical Point
- At indicator → change in colour	- A + B → complethy reaction
- can be determined Experimentally	- can't be determend Experimentally

Primary standard	Secondary standard
- High Purity	- low purity
- Prepared directly	- Prepared indirectly
- Doesn't need standard lization	- need standard liza

مقارنة

Volumetric method
- Depends on measuring volume (mL)
يعتمد على قياس الحجم

gravemetric method
- Depends on measuring the mass (g)
يعتمد على قياس الكتلة

Type of volumetric method

1- nutrilization (Acid-base) → soluble salt

2- Precipitation (P.P.t) → insoluble compo und without change in the valency

3- Redox → oxidation and Reductio → loose or gain of electron → with change in the valency

4- complex metric → soluble source other th OH and H

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what are the Requirmet of volumetric titration?

1- simple and balanced chemical reaction
2- Rapid reaction and should be practically insta
3- no side reaktion
4- Marked change (Indicator
5- should be quantitative

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-what are the propeties of Primary stand solutio
1- High purity 2- Prepared Directly
3- Doesn't need standardlization

23- Requirment of Indicator?
1- Have change in color
2- not volatile
3- Doesn't form insoluble complex
4- Chemicalw inert

5) which of the following is standard solution or not and give reason?

compound Reagent	Y/N	Reason
Hydrochloric acid (HCL)	no	Volatile in High conce
sulphuric Acid (H_2SO_4)	no	Hygroscopic
Sodium hydroxide (NaOH)	no	Reacts with CO_2 in
calcium hydroxide ($Ca(OH)_2$)	no	insufficientlw Solub
Amonia (NH_3)	no	Volatile

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Q-Perform the following calcalation

1-calculat the (M.wt) for following

1) $CaSO_4.2H_2O \Rightarrow M.wt = 1\times40 + 1\times32 + 4\times1 + 2\times16 =$

$40 + 32 + 64 + 36 = 172\ g/mol$

2) $(CH_3)_2CHNH_2 \Rightarrow M.wt = 12\times2 + 3\times2 + 12\times1 + 14\times1 + 2\times1 =$

$59\ g/mol$

3) $H_2SO_4 \Rightarrow M.wt = 2\times1 + 1\times32 + 4\times16 = 98\ g/mol$

d- $Mg(OH)_2 \Rightarrow M.wt = 24\times1 + 16\times2 + 1\times2 = 58\ g/mol$

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2) How many moles are contained in 2.00 of Pure Benzoic Acid (M.wt = 222.1 g/mol)

$$n(mol) = \frac{mass(g)}{M.wt(g)} = \frac{2}{122.1} = 0.02\ mol$$

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3) How many gram of Na^+ are contained in 25.0g of Na_2SO_4?

$M = ??$ 0.205 mole Na_2SO_3 $M.wt = 106\ g/mol$

$$M = n \times M.wt = 0.205 \times 106 = 21.73\ g$$

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